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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,799	12/30/2003	Pierce Keating	RADIP005	5351

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EXAMINER

FILE, ERIN M

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

5/8

Office Action Summary	Application No.	Applicant(s)	
	10/749,799	KEATING, PIERCE	
	Examiner	Art Unit	
	Erin M. File	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/24/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 8-11, 16, 17, 22, 24, 27, 29 rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al (U.S. Patent No. 6,141,389) in view of Enam et al. (U.S. Pub. No. 2002/0118704).

Claim 1, 22, 29, McCallister discloses:

- selectively negate a plurality of samples of the signal to provide negated and non-negated samples of the signal (fig. 2, 62, 64 negate in phase and quadrature samples respectively);
- use the negated and non-negated samples as in-phase (I) and/or quadrature (Q) components of a plurality of complex samples (input to multiplexer 60 includes negated and non-negated in-phase and quadrature signals, col. 6, lines 18-30);
- the algorithm being such that the plurality of complex samples are equivalent to the result that would be obtained by applying an effective sampling function to the signal (col. 6, lines 18-30).

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McCallister fails to disclose selecting a beat frequency of the effective sampling function, However, Enam discloses selecting a beat frequency of the effective sampling function by adjusting the algorithm ([0011], lines 5-9). Enam discloses this beat frequency selection has the advantage of advantageously obviating against the need to synchronize ([0011], lines 9-10). Because of this advantage, it would have been obvious to one skilled in the art at the time of invention to incorporate the beat selection of Enam into the invention of McCallister.

Claim 4, McCallister further discloses the effective sampling function is a complex sampling function (fig. 2, output from multiplexing selection 54 is a complex signal).

Claim 8, Enam further discloses plurality of samples comprises a plurality of digital samples at a non-zero carrier frequency ([0058]).

Claim 9, McCallister further discloses plurality of complex samples comprises a plurality of complex samples of the signal at baseband (col. 2, lines 55-57).

Claim 10, McCallister further discloses signal is a modulated signal (fig. 2 represents element 14 of figure 1 which is described as a modulator, col. 3, lines 19-24).

Claim 11, neither McCallister nor Enam disclose the signal is a modulated signal (fig. 2 represents element 14 of figure 1 which is described as a modulator, col. 3, lines 19-24) and the plurality of complex samples comprise a directly downconverted complex image of the modulated signal (fig. 1, mixer 46 downconverts the signal with a local oscillator 48).

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Claim 16, McCallister further discloses the plurality of samples results in either an I component of one of the plurality of complex samples or a Q component of one of the plurality of complex samples (fig. 2, output from multiplexing section 54 is a complex signal).

Claim 17, McCallister further discloses the plurality of samples results in both an I component of one of the plurality of complex samples and a Q component of one of the plurality of complex samples (fig. 2, output from multiplexing section 54 is a complex signal).

Claim 24, McCallister further discloses an input connection configured to receive the plurality of samples and provide the plurality of samples to the complex sample generation module (fig. 2, input to 58).

Claim 27, McCallister further discloses the complex sample generation module comprises an integrated circuit fig. 2, element 20 is described as a high speed IC).

3. Claims 2, 3, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al (U.S. Patent No. 6,141,389) and Enam et al. (U.S. Pub. No. 2002/0118704) as applied to claims 1 and 25 above, and further in view of Abe et al. (U.S. Pub. No. 2004/0101067).

Claims 2, 25, neither McCallister nor Enam disclose an analog to digital converter configured to generate the plurality of samples of the signal, however, Abe discloses an analog to digital converter configured to generate the plurality of samples of the signal ([0351], fig. 25). The use of an analog to digital converter

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to generate digital samples of signal is extremely well known in the art as a low cost and effective method of signal conversion and would therefore be obvious to one skilled in the art at the time of invention to incorporate the analog to digital conversion as disclosed by Abe into the combined invention of McCallister and Enam.

Claim 3, Abe further discloses the undersampling the signal to obtain the plurality of samples of the signal ([0351], fig. 25).

4. Claim 26 rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al (U.S. Patent No. 6,141,389) and Enam et al. (U.S. Pub. No. 2002/0118704) as applied to claim 22 above, and further in view of Abend et al. (U.S. Patent No. 6,682,483).

Claim 26, neither McCallister nor Enam disclose the complex sample generation module comprises a field programmable gate array (FPGA), however, Abend discloses the complex sample generation module comprises an FPGA (col. 26, lines 53-56). Because the use of FPGAs is well known in the art because they have the advantage of being both flexible and universal, it would have been obvious to one skilled in the art at the time of invention to incorporate the FPGA as disclosed by Abend into the combined invention of McCallister and Enam.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: it is unclear how adjusting the algorithm to select the beat frequency is performed. There are no indications of how the adjusting of the algorithm connected to the beat frequency selection.

7. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent Claims 1, 22, and 29 include the limitation "the algorithm being such that the plurality of complex samples are equivalent to the result that would be obtained by applying an effective sampling function to the signal" is unclear. How the samples can be determined to be equivalent to an effective sampling function is not adequately defined. Because of this ambiguity the claims are indefinite.

Allowable Subject Matter

8. Claims 5-7, 12-15, 18-21, 23, and 28 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 1:00PM-9:30PM.

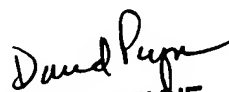
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571)272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

EMF

4/11/2007


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER